**Name: Paul Hume Date: 1/9/12**

**Task 5**

**Analyse energy audit data**



**• Identify energy usage within the scope of the ICT project and provide a detailed report**

**• Estimate potential energy savings and payback periods for recommended actions**

Detailed report - SD-KPI 1: Energy usage / CO2 emissions

• Energy efficiency of IT products is a key to reach Kyoto target.

• Does the company look for and propose progress on this issue?

Potential energy savings and payback periods for recommended actions e.g.

• IT architecture

• Hardware efficiency

• Software power management

|  |  |  |  |
| --- | --- | --- | --- |
| **Hardware** | **Cost** | **URL** | **Average power** |
| Server | $500 | Generic | 45 watts idle |
| Switch 24 Port TP Link TL1024d GigaBit | $74.50 | www.digistar.com.au | Idle 7 -8 watts (2 thin clients attached) |
| Thin Client x 1  Wyse SE3215 | n/a – Est. $40 | www.partstore.com | 9 watts (each) |
| Modem/router  Netgear | $176 | www.pcworld.idg.com.au | 6 watts + 1watt for dongle |
| Printer Lexmark Z12 | $25 | www.ebay.com.au | Idle 8 -16 watts |
| Monitor hp compact FP5315 x 2 | $25 | www.ebay.com | 18 watts (each) |
| Thin Client x 1  Ultra Thin Y210 | $74.21 USD | www.aleixpress.com | 7 watts (each) |
| TOTAL | $914 |  | 152 watts (Server + 2 thin clients + 3 monitors+ printer)  COST $0.86 per day |
| TOTAL (estimated) | $2236 |  | 1000 Watts (Server + 20 thin clients + monitors +printer)  COST approx.$7 |

… making IT Infrastructure more efficient reduces the electricity needed to run computing and telecom equipment, the cooling needed to keep facilities at the right temperature, the energy used to build the systems, the resources consumed to build-out new facilities, and the electronic waste that results from equipment disposal.

**Research:** **Sustainability in Information Technology at:**

<http://www.epeat.net/>

<http://sustainablestanford.stanford.edu/sustainable_it>

Answer the following:

1. **Who is EPEAT? The EPEAT is an environmental rating in relation to computers and other electronic equipment. It was developed by through the collaboriation of industry businesses , government and academic representatives. It is used by hundreds of companies, education institutes and dozens of governments in countries all over the world.**
2. **Explain the EPEA Gold, Silver and Bronze standards. 8 standard criteria covering things like materials, packaging and end-of-life options are examined. If the product meets all 8 criteria then it is given a bronze rating. If a product also covers 50% of the deemed optional criteria it recieves a silver rating and anything over 75% gets it a gold.**
3. **Give an example of a PC /Monitor meeting EPEAT Gold: ASUSTek VH196T-P**
4. **Give an example of a PC / monitor meeting EPEAT Silver: DeLL VOSTRO 3560**
5. **Explain the new green labeling brand from EPEAT called ‘EcoSense’. 'Eco Sense' is the consumer focused side of EPEAT. Designed to help everyday consumers with choosing products.**
6. **Explain the new mandatory environmental standards for ICT procurement by the Australian Government. Procurement now must include compliance with ISO 14021 at the EPEAT Silver level as a minimum. Product take back must be in place this includes mobile devices, toner and computers for recycling. Also packaging of the equipment must be covered by the NPC (national packaging covenant or comply with the nation environment protection measure.**
7. **Provide a detailed report on** **energy usage within the LAN case study for each class of hardware:**
   1. **Common Equipment – Server, modem/router, switch**
   2. **Desktop Equipment- Thin Clients, monitors**
   3. **Printing Equipment – Inkjet printer**

|  |  |  |  |
| --- | --- | --- | --- |
| **Common Equipment** | **Average Energy** | **Proportion of Total** | **Annual CO2 Emissions** |
| **Common Equipment** | **60 Watts (Router + Server + Switch)** | **46%** | **60\*24\*365-6.89560/10000**  **=362.433** |
| **Desktop Equipment** | **52 Watts (2x Thin Clients + monitors)** | **41%** | **52\*8\*260\*6.89560/10000**  **=74.853** |
| **Printing Equipment** | **16 Watts (1x printer)** | **13%** | **13\*3\*260\*6.89560/10000**  **=6.992** |

1. **What strategies has Stanford University used to reduce energy usage for each class of hardware? Desktop Equipment - Purchase EPEAT Gold equipment. Moving backups and updates to daytime, turning off monitors and using PC sleep mode. Common Equipment - Use EPEAT Gold equipment. Server virtulisation. PUE monitoring. Printing Equipment - Use EPEAT Gold devices.**
2. **Recommend actions for each class of hardware for** **the LAN case study**

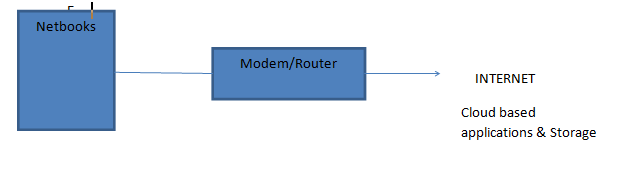
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| --- | --- | --- | --- | --- | --- |
| **Class of hardware** | **Recommendation/s** | **Potential energy savings** | **Cost** | **Payback** | **Assumptions** |
| Common Equipment | **Newer equipment.** | **20 – 50%** | **$1500** |  | **1** |
| Desktop Equipment | **Newer thin clients** | **50%+** | **$427 each** |  | **2** |
| Printing Equipment | **Get newer printer** | **30 – 50%** | **$330+** |  | **3** |

**Assumptions**

1. **Newer equipment available is more energy efficient. Including server, router and switch.**
2. **Newest thin clients use 13 watts in total and also can use PoE**
3. **Newer printers are better power rated and use both sides of paper and also can use non-toxic inks**

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Practicum - Measure the Desktop power consumption for a Web client for a small school:



|  |  |  |  |
| --- | --- | --- | --- |
| Condition | Web Client  1 | Web Client  2 | Web Client  3 |
| ID/Serial No: | Y210 | Lennovo 8172-LMS | Old WYSE |
| off | 0 | 1.5 | 0 |
| Max boot | 14 | 150 | 8.5 |
| idle | 12 | 135 | 7.6 |
| W/P | 12 | n/a | n/a |
| Internet | 13 | 131 | n/a |
| Music | n/a | 143 | n/a |
| Video | n/a | 143 | n/a |
| Monitor | 18 | 18 | 18 |

Recommend a ‘Greenn’ printer for a small school: Lanier GXe3350N

URL: http://lanier1-px.rtrk.com.au/shop/item/gxe3350n-colour-gelsprinter

Examples:

* Replace Server HDD with SSD
* Replace server MB with high performance quad core 32GB RAM with capacity for 64+ thin clients
* Replace monitors
* “green” printing
* “cloud” services

**Best Practice Sustainability at Work**

**Innovative IT Technologies reduce infrastructure and conserve energy**

* According to a May 2007 report from Cisco, packet voice networking costs only 20 to 30 percent of an equivalent circuit-based voice network. Unified messaging services allows the consolidation of fax machines, video conference rooms and voicemail systems into a single platform, with infrastructure cost savings of as much as 40%.
* Lyra Research states that usage of converged network copier-printers products allows equipment consolidation, reducing the number of output devices in a typical corporation by up to 60%. In addition, IT departments are freed from supporting diverse types of printers. Hewlett-Packard‘s Neoware thin client computing solutions announced that its devices can help companies reduce computing-related energy costs by up to 90 percent.
* <http://www.greenit.net/solutions_enterprise.html>